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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/559,065	04/28/2000	German Goldszmidt	YO999-479	3172

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EXAMINER

LIN, WEN TAI

ART UNIT	PAPER NUMBER
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2154

DATE MAILED: 11/25/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/559,065

Applicant(s)

GOLDSZMIDT ET AL.

Examiner

Wen-Tai Lin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-10, 12-17, 19-38 and 40-48 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☒ Claim(s) 11, 18 and 39 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-48 are presented for examination.
2. The text of those sections of Title 35, USC code not included in this action can be found in the prior Office Action.
3. Regarding Applicant's comment about the draftperson's requirement on renaming Tables 1-5 as figures: Applicant is reminded that Tables 1-5 are counted as drawing sheets because they were submitted together with the figure drawings, with table pages labeled consecutive to the drawing pages. To have these table pages considered as they were intended, it is required that these table pages become part of the specification. For example, Applicant may de-associate the table pages from the figure pages and put them in an appendix.
4. Claims 31-39 and 48 are objected to because of the following informalities:
 - (i) As to claim 31 (or 48), the term "ICT-informed(i)" at lines 4 (5) and 14 (15) is treated as a parameter, while the same term at line 12 (13) is treated as a verb. Such inconsistency renders the term indefinite because it is not clear what value should be recorded in the parameter at line 12 (13).

(ii) As to claim 31, line 10 and claim 48, line 11, it is not clearly understood what is meant by the "current amount N(i)" [i.e., "current resource amount N(i)"?].

Clarification/Correction in response to this office action is required.

Claim Rejections - 35 USC § 103

5. Claims 1-10, 12-17, 19-38 and 40-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ellesson et al.(hereafter "Ellesson")[U.S. Pat. No. 6459682], and Gossler et al.(hereafter "Gossler")[U.S. Pat. No. 5799173] in view of Choudhury et al.(hereafter "Choudhury")[U.S. Pat. No. 5719854] and Kompella et al.(hereafter "Kompella")[U.S. Pat. No. 5892754].

6. As to claims 1 and 47, Ellesson teaches the invention substantially as claimed including a method for managing and controlling allocation and de-allocation of resources based on a guaranteed amount of resource and additional resources based on a best effort for a plurality of customers [e.g., col.2, lines 23-25 and 38-41], said method comprising:

- dynamically allocating resources for a plurality of customers, such that said resources received by a customer are dynamically controlled and said customer receives a guaranteed minimum amount of resources as specified

under a service level agreement (SLA) [col.1, lines 49-55; col.2, line 66 - col.3, line 7; col.6, lines 28-38].

Elleson does not specifically teach that the resource includes server resource.

However, Gossler teaches a method of dynamically allocating different number of servers as a means for controlling the speed of customer service [Gossler: Abstract]. Thus, it would be obvious to one of ordinary skill in the art that Elleson could have included the server resource-based service into SLA, because by doing so the SLA coverage could be expanded to area where servers are key elements of services [Elleson: col.1, lines 38-55; col.2, lines 38-41].

Further, Elleson and Gossler do not specifically teach that said service level agreement includes at least one parameter defining conditions of dynamically allocating and de-allocating said server resources.

However, in the same field of endeavor Choudhury teaches utilizing high and low bounds to track the service so as to maintain the actual service level between the two bounds [Choudhury: Abstract; Fig.10]. Furthermore, Kompella teaches that in the control of a QoS (quality of service) parameter, it is required to provide an upper bound and lower bound around a desired operating level for that parameter, so as to introduce a certain amount of hysteresis (i.e., for preventing over sensitivity in the parameter adjustment) [Kompella: col.3, lines 1-38]. Such teaching is in line with Elleson's teaching at col.5, lines 48-54, wherein a traffic flow is associated with specified bounds (i.e., an upper bound and lower bound) for determining whether violation of the traffic contract.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have introduced an upper bound and lower bound around a desired operating level of the monitored traffic in Ellesson and Gossler's system so that the action of allocating and de-allocating said server resources won't be overly taken, because otherwise the system may keep adjusting the resources due to the "under damping" of a feed-back control.

7. As to claim 2, Ellesson teaches that the method further comprising: utilizing a performance metric to increase or decrease an inbound traffic to a customer [col.12, line 60 - col.14, line 9; note that the inbound traffic is the traffic on the ingress edge device as indicated in Figs. 1A and 1B].

8. As to claim 3, Gossler further teaches that the number of servers can be used as a parameter for optimal allocation, wherein optimal allocation of servers can be achieved by considering the available maximum number of servers and the minimum number of servers that is required to satisfy the SLA [Gossler: Abstract].

9. As to claim 4, Ellesson teaches that the method further comprising: utilizing performance metrics to control the allocation of additional server resources to a plurality of customers using bounds on given service level metrics [col.1, lines 48-52; col.5, lines 48-54].

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10. As to claim 5, Ellesson teaches that the method further comprising:
supporting a plurality of service level metrics [col.6, lines 3-15; i.e., bandwidth, delay and loss characteristics are in different service level metrics].
11. As to claim 6, Ellesson teaches that the method further comprising: selectively utilizing a plurality of different metrics for a plurality of different customers [col.6, lines 3-15 and 28-38].
12. As to claim 7, Ellesson further teach utilizing a service level metric an amount of allocable resources, and an inbound traffic rate, for defining a state of a current service level (M,N,R) for each customer [col.5, lines 32-65; col.7, lines 17-38; note: in Ellesson's terminology M, N and R can be equated to resource availability(or utilization), amount of resources, and pacing (at the ingress device) respectively].
13. As to claim 8, Choudhury further teach utilizing a target service level metric M_t to maintain an actual service level M substantially at or near a target service level so as to be guaranteed to fall between low and high bounds ($M_{lowbound}$ and $M_{highbound}$) specified in a service level agreement (SLA).
14. As to claims 9-10 and 12, Choudhury further teaches:
 - computing a target amount of resources N_t and an inbound traffic rate R_t from a given target service level metric M_t and based on the current service level

- (M,N,R) [e.g., Figs.3 and 6; col.10, line 66 – col.11, line 5 or Choudhury; note that in Choudhury's model the request arrival rate is an inbound traffic, while in Ellesson's terminology, the inbound traffic is the monitored traffic at the ingress device. It is also obvious that Choudhury's model can be flexibly adjusted to evaluate different type of control parameters];
- performing at least one of a numerical analysis, a mathematical formulaic operation, an add-one/subtract-one, and a quick simulation for deriving a target amount of resources N_t and an inbound traffic rate R_t) [Choudhury: col.6, lines 40-52; col.7, lines 35-38] and
 - deciding whether or not to add a server resource or to reduce an inbound traffic rate to meet service level agreements for a plurality of customers [col.13, lines 48-64].

15. As to claims 13-17 and 19-25, since the features of these claims can also be found in claims 1, 3 and 9, they are rejected for the same reasons set forth in the rejection of claims 1, 3 and 9 above.

16. As to claims 26-27, Ellesson further teach requesting a system resource manager to perform the resource allocation [Ellesson: 11B, Fig.1B]and requesting an inbound traffic controller to throttle an amount of inbound traffic to the plurality of customers [Ellesson: col.6, lines 32-38].

17. As to claim 28, Ellesson, Gossler, Choudhury and Kompella do not specifically teach maximizing revenue potential when allocating resources beyond a minimum amount for a customer.

However, Choudhury teaches that various ways of calculating service cost [col.14, lines 17-51. Since maximizing revenue is of interest to most business organizations, it is obvious to make use of Choudhury's cost formula to maximize the revenue potential by maximizing the resource utilization, because by doing so the service gain tends to be higher.

18. As to claims 29-30, Ellesson, Gossler, Choudhury and Kompella do not specifically teach how to determine a unit of said resources being fixed size unit of comprising different amount of allocable or de-allocable resources. However, based on Choudhury's model (as described at col.13, lines 18-64), the variable b_{ij} (number of units in resource i required by each request of customer j) can obviously be defined as a fixed or variable amount, depending on the requested service.

19. As to claims 31-38, 40-46 and 48, since the features of these claims can also be found in claims 1 and 9, they are rejected for the same reasons set forth in the rejection of claims 1 and 9 above.

As for the additional limitation in claims 31-39 and 48 requiring a record of "ICT-informed(i)" be maintained indicate whether throttling on inbound traffic is being applied or not: it is noted that "throttling on inbound traffic" is equivalent pacing the traffic

coming into the ingress devices [Elleson: col.6, lines 32-38] and the record could have been kept in the directory server [Elleson: col.6, lines 50-52] and maintain updated because the latter is designed for storing the network state information.

20. Claims 11, 18 and 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and/or overcome the informality objections as described in paragraph #4.

21. Applicant's arguments with respect to claims 1-48 on 10/10/2003 have been considered but are moot in view of the new ground(s) of rejection.

22. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

23. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wen-Tai Lin whose telephone number is (703)305-4875. The examiner can normally be reached on Monday-Friday(8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (703)305-9678. The fax phone numbers for the organization where this application or proceeding is assigned are as follows:

(703)746-7239 for official communications;


(703)746-7238 for after final communications; and

(703)746-5516 for status inquires draft communication.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

Wen-Tai Lin

November 19, 2003


11/19/03